REPORT OF THE SECRETARY OF STATE
ON THE EXAMINATION AND EVALUATION OF AN
OPTICAL SCAN ELECTRONIC VOTE TALLYING SYSTEM

In March of 1997 American Information Systems Inc.(AIS) of Omaha, Nebraska requested examination and certification of an optical scan/mark sense ballot card reader system under RCW 29.33.041 and 29.33.300. The hardware and software for this system is marketed under the name AIS Model 100 Precinct Ballot Counter. The ballot reader is marketed under the name Model 100 firmware version 2.2. The Software that runs the system is called Election Reporting System (ERS) version 1.15.

The Model 100 is a poll-site based, hand fed, optical scan/mark sense ballot card reader. The reader interprets marked ballots and records vote totals onto a credit card sized SRAM memory card. The machine can support the use of memory cards ranging in capacity from 128k to 256k bytes. The Model 100 unit can produce individual precinct reports on-site. The Memory card contains a rechargeable battery that allows storage of vote totals without being plugged into the Model 100. Any Model 100 machine can be used to read any memory card and produce reports.

A PCMCIA reader installed in a Personal Computer running ERS is used to download and program the memory cards. This same reader is also used as the PC's receiver for accumulation of results and report generation. Printers may be attached to the PC for result printing and continuous log printing, external printers may be attached to the Model 100 via an RS-232 port. Results and logs may be printed using a standard Epson compatible printer driver. The log may also be printed by the Model 100 reader's on board printer.

The ERS software is menu driven and allows the user to describe all aspects of an election. In preparation for ballot counting, the user enters office descriptions, positions, precinct combinations, ballot types, and any statistical information such as registered voter totals. The ERS is used to produce and download the precinct specific programming onto the memory card.

A PC running ERS serves as the central accumulator for county wide results. ERS can accumulate results via reading the SRAM memory card or through telephonic communication. Each Model 100 can be outfitted with an internal PCMCIA modem or connected via serial port to an external modem. The machine can be programmed to automatically call the ERS PC and report ballot totals.

The Model 100 reader may be mounted on a ballot box. The ballot box has internal moving parts that include a ballot path diverter that directs ballots into two different bins. One bin contains ballots that have been scanned and counted that are considered complete. The other bin is intended for ballots that have write-in votes on them. All offices on ballots deposited in the write-in bin are tallied with the exception of the office with the write-in vote. The ballot box is important to the most effective operation of the Model 100. This ballot box should always be used with the system.

An electronic vote tallying system must meet the following requirements (as set forth in RCW 29.34.090) in order to be approved for use in Washington State:

1. It must correctly count votes marked on the ballot for any office or ballot proposition;

2. It must recognize and not count overvoted ballots;

3. It must accumulate a count of a specific number of ballots tallied for a precinct;

4. It must accommodate the rotation of candidates' names;

5. It must automatically produce precinct totals in either printed, marked, or punched forms; and

6. It must add precinct totals and produce a cumulative total.

On October 9, 1997 a public hearing was held to demonstrate the American Information System Model 100. Representing the vendor were Steve Bolton, and Ed Sankey. Representing the Office of the Secretary of State was David Elliott, Assistant Director of Elections and members of the election department staff. The meeting was also attended by The Honorable Vern Spatz, Grays Harbor county Auditor, and staff members of several county auditor offices. The vendor made a presentation of the AIS Model 100 and a test election was conducted using a group of test decks prepared by the Office of the Secretary of State and the observers. The vendor answered questions from the Secretary of State staff and the public.

FINDINGS OF THE SECRETARY OF STATE

Upon review of the staff evaluation of the American Information Systems Model 100 vote tallying system, the presentation by the vendor, the evaluation of the system conducted by WYLE laboratories in 1996 and 1997 and the results of the tests performed during and following the public hearings on this system, the Secretary of State finds that the system satisfies the requirements of RCW 29.33.300 when used in the manner described below.

This system does not have the capability to automatically detect write-in votes on a ballot in a manner consistent with Washington State law. In order to record a write-in vote using the Model 100 system, a voter must fill-in an oval next to the write-in blank in addition to writing in the name of the candidate of their choice. WAC 434-62-160 states that the Canvassing Board shall exercise all reasonable efforts to determine the voter's intent, therefore the voter need only specify the name of the candidate, and the candidate's party in the appropriate location on the ballot in order to be counted.

A voter, using this system, that writes-in a candidate name but fails to fill-in the oval next to the write-in blank, will not have a write-in vote recorded by the machine. An additional potential problem exists; if a voter votes for a candidate by filling in the oval next to the candidate's name, and also writes in a name in the write-in blank, but fails to fill in the oval next to the write-in line. This may be considered an overvote by some county canvass boards, but the Model 100 will incorrectly record a vote for the regular candidate. A manual inspection for write-in votes must be made of every ballot.

A second potential problem is the voter that uses an incorrect marking tool to mark the ballot. The machine will not read all types and colors of ink, it was certified by WYLE laboratories for use with a Berol brand black felt pen. Inspection should be performed on each ballot to insure that black ink, or an ink or pencil that provides high contrast with the ballot color, was used by the voter in marking the ballot.

Additionally, the machine only scans the ovals next to the candidate name looking for votes. If a voter marks the ballot in a manner inconsistent with the function of the machine (for example, they mark the ballot by circling candidate names), the machine will fail to record an otherwise valid vote. A visual inspection of each ballot looking for odd marks will solve this problem.

The design of the Model 100 reader, and the requirements of Washington State law, necessitate the use of one of three special procedures on the part of the user county to assure proper tallying and results.

The procedures are as follows:

1)The system may be used as a central counting system if each ballot is manually inspected before tabulation. The inspection should look for write-in votes that do not have filled-in ovals next to them, improperly marked ballots, and ballots marked with non standard marking colors. It is recommended that the canvassing board of any county using this system adopt written procedures governing this process; or

2)The system may be used as a poll site tabulation device if all ballots are inspected during the period subsequent to the election and prior to certification. The inspection of each ballot will be made to find any write-in votes that do not have the accompanying filled in oval, improperly marked ballots, and ballots marked with non standard marking colors. Election results must be updated to include any additional write-ins and adjust totals for any ballot that is found to be an overvote and not a valid vote for a candidate. It is recommended that the canvassing board of any county using this system adopt written procedures governing this process; or

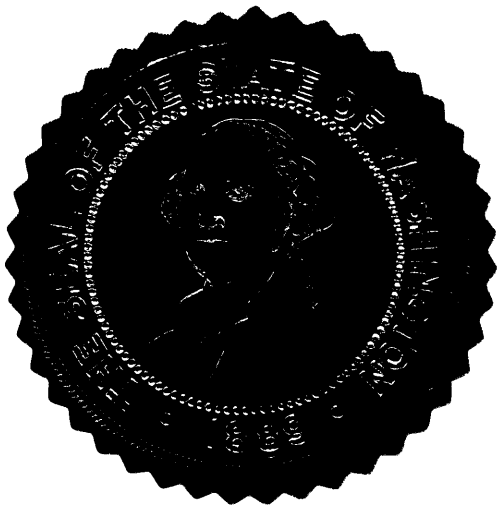
3)The system may be used as a poll site tabulation device if all ballots are inspected by election board workers prior to tabulation. The voter would not feed his/her ballot to the Model 100. The voter would place his/her ballot in either a sealed ballot box, the emergency bin on the front of the ballot box, or other container. Ballots would accumulate this way while the polls are open. After closing the polls for the day the ballots would be inspected as a group, thus preserving voter anonymity. The inspection would search for write-ins that lacked the accompanying filled-in oval, improperly marked ballots, and ballots marked with non standard marking colors. The reader would then be activated and all ballots counted. It is recommended that the canvassing board of any county using this system adopt written procedures governing this process.

A county intending to use the telephonic functions of the AIS Model 100 system must perform a reconciliation of the results prior to certification. This may be accomplished by either performing a direct reading of the SRAM card into the ERS PC, or by proofing the precinct results recorded in ERS against the printout created by the Model 100 at the close of voting before telephonic transmission.

Under the provisions of RCW 29.33.041, the Model 100 vote tallying system, and its associated software are approved for use in Washington State, as an optical scan/mark sense electronic vote tabulation system, when used in compliance with the procedures contained in this certification and Washington State law.

It is recommended that the canvassing board of any county using this system adopt written procedures governing these processes. This equipment should be used with a device or devices capable of suppressing current surges, voltage fluctuations, and any other line disturbances.

Certified on this December 22, 1997



RALPH MUNRO
Secretary of State